

CALIFORNIA PITCH CANKER TASK FORCE

MINUTES

September 9, 2004

Swanton Pacific Ranch

Richard Hawley, Greenspace – The Cambria Land Trust
Stephen Jones, California Department of Forestry and Fire Protection
Tom Smith, California Department of Forestry and Fire Protection
Don Owen, California Department of Forestry and Fire Protection
Bill Werner, California Association of Nurseries
Eric Love, Pebble Beach Company
Dennis Chamberlain, U. S. Forest Service
Steve Staub, Del Monte Forest Foundation
Tom Gordon, U. C. Davis
Nadir Erbilgin, U. C. Berkeley
Doug Piirto, Cal Poly
Elicia Wise, Mendocino Redwood Company
Julie Lydick, U. S. Forest Service
Nikki Nedeff, Monterey Pine Forest Watch
Karen Ferlito, Monterey Pine Forest Watch
Annette Delfino-Mix, U. S. Forest Service
Detlev Vogler, USDA – Forest Service
Jason Pinkerton, Cal Poly
David Yun, Cal Poly
Mike Branson, City of Carmel
Wally Mark, Cal Poly
Deborah Parker, Greenspace – The Cambria Land Trust

Chairman Steve Staub called the meeting to order at 9:30 a.m.

Doug Piirto began the meeting by welcoming the Task Force to Swanton Pacific Ranch and gave an overview of the research that was to be presented at the meeting, after which the members of the Task Force introduced themselves.

Chairman Staub distributed copies of the Strategic Action Plan for the Task Force members to review before the agenda item came up later in the meeting. He stated that he felt that this constituted the final plan and he hoped that the Task Force would concur. He advised the Task Force that he did not want to create the document on site and that he felt the time for wordsmithing was already over. However, he would like to be informed if there are any inaccuracies or if anything was incomplete.

Minutes

Doug Piirto moved that the minutes be approved with changes noted by Tom Gordon. Dr. Gordon seconded the motion, which passed unanimously.

Election Results

Chairman Staub noted that there will be another election at the next meeting. He stated that since the last meeting he sent out an email with a list of the current candidates and their terms. All those up for re-election were elected. He noted that those Task Force members who were not elected in the email election will be up for re-election. He stated that two members who have been active on the task force, Rob Cain and Glen Flamik, have moved out of the area and their duties do not allow them to continue as

Task Force members. He added that they want to continue to be notified about the Task Force and Mr. Cain, who is now the City Arborist for the City of Davis will attempt to attend meetings in his area.

Richard Hawley asked if Deborah Hillyard was elected in the last election. He stated that it was important to have a representative from Fish and Game at the meetings. He added that the last time she was up for re-election, she expressed an interest to still be part of the Task Force. Unfortunately, she has not been able to attend the meetings. Mr. Hawley stated that he will contact Ms Hillyard to determine if she was still interested and if she felt she would be able to make the meetings. Chairman Staub noted that he has been in contact with another person from Fish and Game and will send the information to Mr. Hawley, in case Ms Hillyard is not able to continue on the Task Force.

Administration

Richard Hawley stated that Greenspace is willing provide administration services for the Task Force. He noted that Greenspace will take minutes at the meetings and will provide routine administrative services for the Task Force between meetings. He stated that this service would be provided for \$1,200 per meeting. Chairman Staub stated that he spoke with Susan Frankel about the arrangement and she was in support of the proposal. Tom Gordon added that he thought Greenspace was doing a great job. He noted that it was especially important for work to be done between meetings since the meetings are spread out so far apart.

Tom Gordon moved that the Task Force accept the proposal from Greenspace – The Cambria Land Trust to perform administrative services for one year. Doug Piirto seconded the motion.

Doug Piirto asked if there were sufficient funds in the PCTF account to fund the proposal. Wally Mark, PCTF Treasurer, distributed a financial statement to the Task Force members that was prepared for the last fiscal year. Chairman Staub noted that the Task Force finances appeared to be robust. Dr. Mark said that the workshop that was put on last year did very well, while the return from the golf tournament was disappointing. He added that there has been no income since the last workshop and there is currently none on the horizon. Chairman Staub noted that the Task Force will have to confront this issue in the next 12 to 18 months. Dr. Piirto asked again what the total cost would be for administration for one year. Richard Hawley stated that it would be \$2,400 per year. Chairman Staub stated that since the Task Force currently has \$19,500 in their account, it is in fairly good shape relative to annual expenses, assuming that the Task Force does not let things get out of hand.

The motion passed unanimously.

EM Base Proposal

Since Susan Frankel was not able to attend the meeting, Chairman Staub distributed the EM Base Proposal. Chairman Staub stated that this is the long awaited effort to make information available statewide with an appropriate database for pitch canker finds. He stated that, especially with the new pitch canker find in Sierra Nevada, it is increasingly important to have this information accessible. He added that it was nice to see the formal proposal and that it was likely to become a reality.

Doug Piirto asked if the Task Force could be listed as a cooperator. He said that he felt that it would be appropriate for the Task Force to be listed, since it is very involved. Tom Gordon stated that he felt that Ms Frankel should decide who is listed.

Doug Piirto asked about the funding of the project. Wally Mark noted that Item 4 of the proposal states that the Forest Service will be funding the project. Dr. Piirto stated that Dave Yun has been a significant proponent of GIS and that he should be involved with this project.

Wally Mark asked if this project would follow the same style as the one for Sudden Oak Death. Chairman Staub stated that it would be patterned after that project. Dr. Mark stated that in order for a site to be

posted on the Oak Map, it has to be confirmed by culture work. He asked if the same requirement would be true for this map. Tom Gordon noted that it would be the same, at least to start with. He added that perhaps another layer would be visual. Richard Hawley noted that, at least outside of native stands, there should be culture work. He asked if the strain would be included in the map. Dr. Gordon stated that there could be a layer related to strain as well as a subset for the known sites. Wally Mark added that this would standardize everything so that the information would be available to anyone.

Doug Piirto inquired if it would be noted when the map was revised. Dr. Mark stated that when the information is updated, the website notes the date of the revision. And, again, like the oak map, there could be different layers that can provide different information to different people.

Chairman Staub stated that it wasn't clear to him what was required of the Task Force other than endorsing the plan and, perhaps, writing a letter of support. He noted that, since this was not a funding request, he wasn't sure of what they were asking the Task Force to do. Doug Piirto stated that once the site is developed, it should be linked to the Pitch Canker Task Force website. Richard Hawley said that the two websites would be linked. Chairman Staub stated that he felt the Task Force should formalize their agreement with the project in a letter. Mr. Hawley stated that he would be happy to write a letter to Ms Frankel communicating whatever the Task Force agrees upon. Annette Delfino-Mix stated that Ms Frankel just wanted to be sure that the project was on target. Ms Delfino-Mix said that she will convey the Task Force's comments to Ms Frankel.

Doug Piirto moved that the Task Force formally endorse the EM Base Proposal, with the additions that the website is to be connected to the Pitch Canker Task Force website, that David Yun is to be associated with the project and that the Task Force is to be mentioned as a cooperator. Richard Hawley seconded the motion, which passed unanimously.

Sierra Nevada Pitch Canker Update

Det Vogler distributed material that had been compiled relative to the Sierra Nevada pitch canker discovery. He noted that Susan Frankel has designated pitch canker as a pre-emergent disease in the Sierra Nevada.

Dr. Vogler made reference to the Pitch Canker in the Sierra Nevada – Timeline handout. He explained that the events in blue and italics are those that are not part of the research effort that he is doing. The events in black are research collections that they performed and the red indicates where actual positive collections were made.

Dr. Vogler noted that on November 5, 2003 they were informed that pitch canker had been found in scion wood of Douglas fir sent to New Zealand. On November 12, 2003, Dr. Tom Gordon confirmed that there was pitch canker found on one tree on symptomatic foliage. They proceeded to inspect the local nursery stock, because it was only a few miles from Badger Hill where pitch canker was found and they were about to ship out pine to Southern California for post-fire planting. This test proved negative.

Dr. Vogler stated that four new positives were found on clonal Douglas fir on February 19, 2004. He noted that this is highly valuable Douglas fir that is grown there for breeding purposes. He said that at this time the entire reason for this orchard is on hold because of these five finds of pitch canker. Entry into the orchard is prohibited without a moon suit and all vehicles have to be washed after they leave. Dr. Vogler added that, of the five Douglas fir that had symptoms, the first two were eradicated. Additionally, one of the trees which was a scion donor to New Zealand upon which pitch canker was found was also eradicated.

Richard Hawley asked if they were all the same strain of pitch canker. Dr. Vogler stated that of the six positives (including the one from New Zealand), one is VCG2 and the remaining five are VCG1.

Dr. Vogler stated that the graphic he handed out was to show that trees CC9 and D8 were eradicated and removed. He added that there was a press release and the event was on television. Dr. Vogler said that

three trees remain and that these remaining trees have been checked. He noted that except for those five trees, they have not found anything subsequently at Badger Hill. Originally they were on a bi-monthly sampling schedule, looking for anything symptomatic and also taking random samples. On the first pass they found 8 symptomatic branches. Two months later, no symptomatic branches were found and only one sample returned positive. Richard Hawley asked if it was from washing or tissue culture. Dr Gordon stated that it was from tissue associated with symptoms. Dr. Vogler noted that if you compared the two trees, D8 was a beautiful tree and CC9 was ugly. D8 was a branch wash and CC9 was rootstock. Subsequently, there have been no more symptomatic branches found with the bi-monthly investigations, which involved 60 – 75 branch samples.

Richard Hawley asked when they would expect pitch canker to sporulate. Dr. Vogler stated that it would be in the fall. He stated that what is characteristic in east west ranges with deep incisive river gorges would be winds with a trend going straight up to Placerville. He noted that they would also get the delta breezes in the fall. Dr. Vogler said that you could feel it in the fall and in January in the evening. That could well be the time the spores will be born and germinate.

Dr. Vogler turned the Task Force's attention to a map that had been distributed. He stated that Badger Hill is noted with a red dot. The dot above it is Forest Hill, a genetic plantation. He stated that Douglas fir is grafted from multiple sites. He said that some of them are not growing optimally, but it is farming, so they are growing the best they can. Dr. Vogler noted that the same clones that are at Badger Hill are in Forest Hill. The site above Forest Hill is the Chico Center, which is where the grafting is done. Dr. Vogler stated that the transfer could occur at all three sites. The trees are grafted at Chico and are grown at Badger Hill and Forest Hill. Dr. Vogler stated that the fourth site near the Oregon boarder is Happy Camp. He said that it has large Douglas fir plantings. Dr. Vogler noted that this was not a good place to grow Douglas fir, so many of the trees there look nasty. He stated that they have collected samples from there, so the entire upper state has been covered.

In conclusion, Dr. Vogler said that there has been a remarkable cool period in the Badger Hill area since mid to late August. He said that he would like to increase to monthly sampling in the future, although perhaps with not as many samples. He stated that they have started collecting cones from these clones, both early in the year and again last month. Dr. Vogler noted that they were not able to get pitch canker out of the collected cones.

Dr. Vogler said that at the Pacific Southwest Research Station there had been a superb lab facility and scientists. However, when it was regionalized, they lost a lot of their capability and don't have the facilities anymore. He stated that there are good pathologists in the region, but the lab was gone so the capability was gone. Now, in El Dorado County there is a decent lab for research, thanks to pitch canker. Dr. Gordon noted that this was very important because now there is the capability to do these things more locally, although some things should still go to Davis.

Doug Piirto asked if they were producing seedlings for outplanting in the national forest at Badger Hill. Dr. Vogler said that he was almost sure that no seedlings have been outplanted. He said that they are actively collecting pollen and did pollinate this year, but those cones, once they were produced, have gone into storage. Planting of any of that material has been stopped. Dr. Vogler stated that he was not positive, but since these trees have just come on line, he felt they had probably not been planted. He added that they were still in the experimental stage before actually planting. Dr. Vogler said that the last scion wood from Badger Hill went to New Zealand for a private operation. He stated that obviously this operation will not happen. He said that some of the scion wood, or perhaps all of it, went to the Hood Canal Nursery in Port Campbell, Washington. Dr. Vogler said that a lot of materials were collected and sent to Dr. Gordon. He found nothing in the material, but the rest was destroyed.

Dr. Vogler noted that the Ag Commissioner in the area stated that whenever they know anything about the trees, they were to let him know. Dr. Vogler stated that the issue is that El Dorado County is a big Christmas tree county. He noted that they can't just go on those properties and that State and County Ag

agencies are better equipped to deal with that. Dr. Vogler said that no one knows where the trees come from, and after they get cut, they are thrown on top of a vehicle and taken down to the valley.

Wally Mark stated that there is supposed to be notification to the Ag Commissioner if a host tree is sent out of Monterey County. Dr. Vogler said that this was a huge, unregulated area with ignorant shipment to homeowners. Dr. Gordon noted that if it is nursery material, even a B-rated pest is supposed to be certified again. Dr. Mark again noted that there is notification. Bill Werner said that there is usually an annual or semi-annual visual inspection of the nursery and that is how the nurseries keep their certification.

Dr. Vogler said that Badger Hill used to be a research station with a lot of enthusiasm for knobcone Monterey. He noted that they are now more enthusiastic about white pine and Douglas fir. The knobcone Monterey are gone, but these trees went across the fence line, so there is knobcone Monterey that has escaped from the plantation. He stated that every time they go out there, they scope everything out and collect material. He said that so far they have seen nothing that looks remotely like pitch canker. Dr. Vogler said that adjacent and downwind from the Badger Hill Douglas fir site, there is a huge sugar pine plantation. He noted that directly across the road from the site there is a lot of tip dieback, but they did not find pitch canker fungus either in branches or foliage, which means that so far there are no indications on the real hosts. Dr. Vogler noted that collections will have to be made in February again. He informed the Task Force that knobcone Monterey that are growing near Badger Hill are going to be planted as sentinel trees (or canary trees) in the Badger Hill site.

Dr. Gordon stated that he submitted a proposal to do more work on the Sierra Nevada infestation through the USDA exotic pest diseases program and received the funding for the study. Because of this, he can look at other conifers that have been thought of as non-hosts. He noted that there were several ways to look at the differences in the VCG, either it was introduced more than once, it was a mixed introduction, or it has been there a long time. Dr. Mark noted that if it had been there a long time, it should have been in the knobcone Monterey. Dr. Gordon stated that he couldn't be sure because he wouldn't know what conditions might have limited it. Richard Hawley asked about the cool, moisture-laden air that blows up through the area. He asked, of the two strains, where they are predominantly located. Dr. Gordon said that those two strains are predominately in the Bay Area and in Northern California. He noted that if it was introduced from Northern California he would have expected C1, although C2 is up there, too. He stated that C1 and C2 are very close genetically, so it could be a simple mutation that occurred, so that C1 could have spun off of C2. Dr. Gordon noted that the strain in New Zealand was C2 and that C1 was in Badger Hill.

Richard Hawley asked if they were going to put spore traps in the air. Dr. Vogler said that they anticipate doing that, although at this point they have some misgivings about that. That would be an intensive project and from what they know about it right now, the first hypothesis would be that it is not everywhere, so there is no reason to look everywhere. The real issue is the foliage and the impact upon the actual host, so that is what they need to look at for the tree grower. The seedlings were grown, planted and ready to go. Dr. Vogler noted that their primary obligation as a federal agency is to make sure that they know what is going on at the plant surface, as opposed to what is in the air. He noted that he thinks that the air is filled with stuff, a lot of it is plant pathogenic and a lot of it is human pathogenic.

Chairman Staub thanked Dr. Vogler for his report. He stated that it raises a critical question that needed to be addressed as a Task Force and as part of the Action Plan. He said that Jack Marshall had emailed him stating that SOD has a strategy on how to define its movement and he thought that it would be important to have this information for pitch canker. Chairman Staub thought that it would be a logical outgrowth of the Sierra Nevada information that the Task Force just received. He asked if anyone had any thoughts about potentially applying a program for pitch canker movement similar to the one used for SOD.

Richard Hawley reminded the Task Force that research was formerly developed by Tom Gordon, Dave Woods and Andrew Storer on a critical pathway across the Valley, up to the north and over the Sierras. Mr. Hawley stated that the research dealt with insects, and not with the movement of pitch canker. Dr.

Gordon added that the research did not deal with human assisted movement. Chairman Staub stated that he was looking for a delimitation strategy.

Wally Mark stated that there was a difference with detection of SOD and pitch canker. He noted that aerial detection was possible with SOD because there can be early detection on a variety of foliage before it shows up on trees. This is not true with pitch canker. Dr. Mark said that they used a risk mapping system based on host presence as well as climatic factors and roads where people may be involved. This results in a fairly involved methodology to determine where to look for the pathogen. Dr. Mark added that it would be an overwhelming task to look everywhere the host occurs with pitch canker, with probably less payback than with SOD, because SOD hasn't spread to its high risk areas, but pitch canker has. That said, Dr. Mark noted that looking in high-risk corridors could be worthwhile, especially where there is high risk with suitable host areas near tree plantations. He said that it is probably warranted to look at the high-risk areas, but not to look randomly on a statewide level.

Dr. Vogler said that he could see looking at it as a forestry issue, because material is moved around in the forest without inspection. Also, he felt that nurseries and other industries should be looked at. And, thirdly, an area like El Dorado Hills, with the number of homes being built there, would be an important area to include. Dr. Vogler noted that everyone will have gardens and each homeowner will decide what will go into their gardens. He stated that for SOD there are too many hosts, but for pitch canker it would be possible to prepare a white paper to lay out these issues and what the scope of the problem would be over the next few decades. Dr. Mark noted that the Forest Service does need to be clean in their practices, so this would be a good strategy.

Dr. Vogler stated that there are nurseries and botanic gardens along the coast that have the disease in them. He noted that the nursery industry is not a producer anymore but is a distributor. Their plants come straight from Asia, they are put in huge warehouses and then they are distributed. Dr. Vogler said that they don't really know what is going on and noted that it was lucky that Badger Hill was detected.

Strategic Action Plan

Chairman Staub stated that a white paper could be written and that he would like to tie it to the research section of the Action Plan. He asked how important a white paper would be in relation to the other research and/or monitoring priorities. Chairman Staub said that the action plan is a nearly complete document that Richard Hawley, Tom Gordon, Susan Frankel and other people have been pulling together. He stated that he thought the Task Force was ready to act on the Plan and that the only remaining piece to deal with was how to present recommendations or prioritization of research. He said that this was discussed and voted upon in 2003. Chairman Staub expressed his hope that the Task Force could nail down their concerns and priorities so that the Executive Committee can get the Plan out sometime in the month after this meeting. The Task Force took a few minutes to read the Strategic Plan.

Chairman Staub asked if there were any questions regarding the general section of the research. He noted that there were no questions. Doug Piirto stated that there should be an indication on the first page that this is a living and breathing document so that the public would know that it is amended regularly. Richard Hawley said that there could be a comment that the Plan gets reviewed on a yearly basis and that it is sent out to every Ag Commissioner in the Zone of Infestation. He noted that this would be good in the preamble or as a footnote on the front page. Dr. Piirto stated that it is important to note if and when it is reviewed, even if changes are not made. He added that he felt the website should show when the Plan was last examined and updated. Chairman Staub noted that his suggestion could be accommodated.

Chairman Staub asked the Task Force to move on to the research section. He stated that he felt this section has a tremendous introductory portion and that all that remains for the Task Force is to determine what needs to be said beyond those opening two paragraphs. He said that he was open to suggestions. He added for reference that in the previous Action Plan the Task Force identified action areas. At a previous meeting, the Task Force went through a long list of what it wanted research to address and voted for the top priorities, which included:

1. Long term impacts on native stands;
2. Disease resistance;
3. Disease transmission;
4. Impacts of abatement and other management techniques; and
5. Determining the actual cause of mortality.

Chairman Staub said that one of the Task Force's primary tasks is to make recommendations concerning research priorities. He felt that the Task Force needed to be clear and have a consensus on research priorities. Chairman Staub asked if the Task Force wanted to present anything beyond the first two paragraphs.

Dr. Gordon asked if Chairman Staub was asking the Task Force for a list that prioritizes research. Chairman Staub stated that Wally Mark's comments at the previous meeting were on point when Dr. Mark stated that the Task Force should highlight general categories that need to be addressed rather than individual research projects. He added that it could tie into how high a priority the white paper, monitoring and the GIS database would be. Chairman Staub said that then the Task Force would have a reference which indicates what is a great need and what needs to be supported and funded. He added that it is rather awkward once you get beyond generalities and would be better to have an appropriate set of general recommendations.

Dr. Mark suggested that the five items listed above could be the current priorities. He added that it wouldn't exclude anything else, but just shows the Task Force priorities. Dr. Mark stated that those items are fairly broad and felt that they include most everything currently being worked on by Dr. Gordon and Cal Poly. Dr. Gordon noted that it should be made clear the Task Force is focusing on other species.

Chairman Staub noted that the actual priorities would have to be written, that the list above was just a list in the minutes. He wanted to be sure that nothing is missed. Chairman Staub said that the actual cause of mortality would be a difficult one to write. Dr. Gordon stated that it could come under monitoring. Dr. Mark added that long term monitoring could take that into account and that the electronic database would be a big help. There was a discussion about whether the focus should be on pitch canker or on the host. Richard Hawley stated that the wordsmithing could happen over the internet, but he wanted to be sure the white paper was included. Chairman Staub said a white paper would logically fall within the disease transmission section of the Plan and could identify higher risk areas and potential spread areas. Mr. Hawley suggested that the priorities be kept to four issues and the white paper be wrapped into the disease transmission section. Chairman Staub noted that if the white paper would be valuable, he would be happy to highlight it in the Plan. Annette Delfino-Mix stated that a white paper that lays out the scope of the issue would be a help in order for the Forest Service to decide where to put their investments in the future. After a question from Doug Piirto, Chairman Staub clarified that the white paper would be specifically about critical pathways of spread, trying to monitor where the disease is and whether it is spreading to other areas. Dr. Mark stated that it would fit into the Plan where it discusses the statewide risk area. Mr. Hawley noted that it could be a subtitle under research.

Dr. Vogler stated that this document would primarily affect managers. He added that it is important to find out where the Sierran species would fit in. Dr. Mark stated that it would be important to identify the pathways for transfer, where our own activities are contributors, and the high-risk areas. He said that the Task Force could try to give people a wake up call to show it isn't only a coastal issue and that management techniques are important. Dr. Vogler added that the Feds need to decide what to do with their management plans. Dr. Mark stated that nurseries have been very involved in pest introduction, which has been shown both in pitch canker and SOD.

Chairman Staub said that if it is a consensus, he would entertain a motion to approve the action plan as written with the addition to the research section to be wordsmithed by the Executive Committee.

Doug Piirto stated that after item one and two there needs to be a paragraph transitioning to the list. Chairman Staub noted that they do not expect to have a list of projects in the plan. There will be the list of the general priorities that the Task Force discussed. He added that they could use the project list with

the SB 1712 list and the list of work Cal Poly is doing and other relevant studies and have it in an addendum. Richard Hawley noted that it is important to have the information on the website and said that, pending publication, he would keep track of it. Chairman Staub mentioned that the Strategic Action Plan should be included and Dr. Piirto noted that researchers should be responsible for getting their research on the website.

Don Owen reminded the Task Force that the Fremontia, the publication from the California Native Plant Society, has not had something on pitch canker for a long time. Dr. Owen said that an update of the Action Plan and the white paper in particular would be good for that publication. He noted that if the Task Force produces these documents and no one reads them, they wouldn't be doing anyone any good. Dr. Owen stated that it was time to get the information out in some sort of forum that the public is going to see and that the Fremontia would be a perfect avenue. Richard Hawley noted that this would go perfectly with the continuing need to do more educational programs after the white paper and the Action Plan are completed. He stated that the last workshop was very successful, and now there is a lot of new information that needs to get out. Dr. Gordon suggested that the Task Force could have a proceeding in association with a symposium in which documents that represent the essence of what is presented at the workshop could be produced and placed on the website. A discussion followed regarding the expense of a proceeding with Dr. Gordon stating that the Task Force could help fund it and/or the educational seminar could help pay for it.

Chairman Staub asked the Task Force if they would like to approve the Action Plan

Doug Piirto moved the Task Force approve the Action Plan with recommended amendments and completions. Richard Hawley seconded the motion, which passed unanimously.

Chairman Staub turned over the meeting to Doug Piirto of Swanton Pacific Ranch. Dr. Piirto welcomed the Task Force to Swanton Pacific. He gave a brief description of the program at the facility and introduced the first speaker.

Monitoring Pine Pitch Canker with GIS, presented by David Yun

Mr. Yun introduced his presentation to the PCTF by reminding them that he had given this presentation before and was going to just give an overview of the project.

Mr. Yun stated that the project had three objectives:

- ◆ To establish permanent continuous forest inventory (CFI) plots for monitoring and management;
- ◆ To determine Pitch Canker ratings for all Monterey pines in the plots; and
- ◆ To analyze data for pitch canker disease distribution and its development and progression at Swanton Pacific Ranch.

Mr. Yun discussed the total Monterey pine aggregate at Swanton Pacific Ranch. Wally Mark noted that because of the natural hybridization between Monterey pine and knobcone pine, the native stand in Swanton Pacific is much different than any of the other native stands.

Mr. Yun noted that the project was limited to the Monterey pine stand at Swanton Pacific. He described the data collection involving the CFI plots, which involved 1/5-acre circular plots which were 52.7 feet in diameter. The pitch canker rating for 1999, 2000 and 2001 for the Monterey pines within those plots was noted. Mr. Yun described the map that was created from this data to the Task Force and described how the point data was created. He stated that the key was determining how to get the xy coordinates. Mr. Yun stated that his team found the numbered trees by the general bearing and distance information that they had obtained. These trees were then noted as points in relation to the CFI point. With this information the team was able to determine where the tree is for the xy coordinates. This information was placed in their Excel program and with some alteration and calculations, the trees can be placed on a map. Mr. Yun showed maps of the locations of the Monterey pines to the Task Force.

Mr. Yun explained the rating system used by Cal Poly and showed photographs which demonstrated each rating. He noted that the data seems to imply that there is a proportional decrease in changes in branch tip ratings from 1999 to 2000. Rick Hawley asked if that meant that there was a decrease in infections from 1999 to 2000. Mr. Yun noted that the data indicates that infections went down proportionally in that time. Mr. Hawley asked what the ground truth was for the system, e.g. is it 97% accurate? Mr. Yun stated that it is within maybe a meter or two, so it is very accurate. He added that along the edge it is completely accurate. Wally Mark noted that it is within two feet of being right on the mark for the plot plan. Within plot itself, it is within inches.

Mr. Yun then showed the Task Force a series of aerial photographs that had been taken of Swanton Pacific from 1928 to 2000, which demonstrated the gradual changes in the landscape with varying types of land use.

Mr. Yun concluded by stating that GIS can play a significant role in the planning and managing of the pitch canker project. He added that it is a powerful tool for analysis of the project.

Silvicultural Management Strategies for Pitch Canker Infected Año Nuevo Stands of Monterey Pine – Presented by Elicia Wise

Ms Wise stated that in her presentation she wanted to discuss the results of the first year. She noted that she has made this presentation to the Task Force a number of times and that it is now in the fifth phase. The objectives of the program were to:

- ◆ Develop guidelines for management of Monterey pine stands affected by pitch canker
- ◆ Evaluate and demonstrate uneven-aged management of native Monterey pine stands
- ◆ Determine the optimum gap opening size for natural and artificial regeneration of Monterey pine seedlings
- ◆ Determine the effectiveness of different site preparation treatments
- ◆ Evaluate the survival of seedlings from various sources

Ms Wise described the experimental design as 27 circular study plots with two silvicultural treatments (lop and scatter, pile and burn and one control). The total study area was approximately 8 acres and the total harvested area was 5.25 acres. The hypotheses were that seedling survival is significantly different between different factors (site preparation treatment, gap size and parent tree) and that seedling height and caliper are significantly different between factors.

Before treatment the data collection involved a plot inventory of all trees equal to or greater than 1.00" dbh, the natural regeneration, and an ocular estimate of the understory vegetation. After treatment the data collected included natural regeneration, understory vegetation, and seedling growth and survival. There were 13 parent trees represented in the gaps. A total of 2,280 seedlings were planted in February 2002. These seedlings were monitored in three-month intervals.

The first year data considered the size of the gap, the understory treatment used and the parents. The pretreatment overstory composition was very heterogeneous, dense in some areas and sparse in others. The average diameter was fairly small. Pretreatment pitch canker infection levels seemed to be falling off. After the first year, the lop and scatter understory treatment and the control section produced little change while the pile and burn had the most occurrence of thistles and grasses. Additionally, the half-acre gap size produced more ruderals, the quarter-acre gap size produced more native grasses and the eighth-acre gap size produced little change in the understory vegetation. Ms Wise noted that after the gap was created, a lot of weedy species came in, especially when it was located in rangeland.

Ms Wise stated that there was most mortality in August. She noted that there was not a striking difference between seedling survival and their parents' survival, that the offspring of the most susceptible trees survived as poorly as the parent did. She reported the seedling survival model results as follows:

- ◆ Pile and burn odds of survival were 42% greater than lop and scatter

- ◆ Eighth-acre odds of survival were the best, but there was no significant difference between eighth-acre and half-acre
- ◆ There was a significant different between parents.

Dr. Gordon asked why Ms Wise thought that pile and burn survival was so great. Ms Wise noted that there were nutrients in the soil from the burn and also the burn might have sterilized the soil.

Ms Wise stated her preliminary conclusions. She noted there was scarce Monterey pine regeneration when they began this study. The incidence of pitch canker infections seems to be decreasing for now. Ms Wise said that there is a relatively uniform understory composition in this area, even though it is a heterogeneous stand structure and that the only thing regenerating in the stand is hardwood.

Ms Wise stated that seedling survival increases in pile and burn understory treatment. She said that the differences among parents and survival is affected by gap size, but she didn't feel they could determine which gap size is best for survival. Ms Wise noted that there are significant differences only in the first year caliper measurements for the gap size factor and that the first year growth data is highly variable. She stated that factor effects on growth should be detectable within 5-10 years.

Ms Wise stated that gap regeneration method has potential for future management, but not without anticipating what kind of growth will come in and compete with the species. She noted that it has been theorized that once the canopy is established, the thistle will disappear.

Richard Hawley asked about the longevity of the seed. Dr. Mark stated that once the canopy closes, you don't have to worry about that. Ms Wise noted that it is important not to do just one thing, that different methods should be used, such as spraying the site, raking it, burning it, etc. She said that it is most important to let the canopy close.

Dr. Vogler asked if there was 10% frequency of gall rust in the residual understory or in the seedlings. Ms Wise stated that it was not in the seedlings, but the trees that were 15 to 20 years old were really affected by gall rust. Dr. Vogler asked if someone will carry on with this project. Ms Wise noted that she hopes that someone will take up the work. Dr. Piirto stated that they are seeking new funding to continue with the project. Ms Wise thanked the Task Force for allowing her to give her presentation to them.

Second Year Silvicultural Management Strategy for Pitch Canker Infested Año Nuevo Stands of Monterey Pine – Presented by Jason Pinkerton

Mr. Pinkerton began his presentation by stating the objectives of the study, which include:

- ◆ Planted seedling survival as influenced by size of gap opening and treatment;
- ◆ Growth in height and diameter as related to size of parent, gap opening treatment and location within plot;
- ◆ The effect of group size, treatment and location on natural regeneration;
- ◆ The effect of gap opening size, treatment and location on natural understory vegetation;
- ◆ The effect of plot location and seasons on survival rate.

Mr. Pinkerton reviewed the methods and procedures of the project, as described by Elicia Wyse. He stated that data was collected in February of 2004, so they were able to complete a second year of analysis. He stated that there was a 43% mortality rate and that in February of 2003 they interplanted 673 seedlings into the plots because of this dieback. He noted that they used the original parents to replace each of the seedlings where it was possible. He stated that they are also measuring the survival of the seedlings that were interplanted. Mr. Pinkerton said that when the mortality rate of the interplanted seedlings is consistent with the original planting, it is a good indication of the parent's resistance.

Mr. Pinkerton showed the survival by plot and told the Task Force that they would be seeing four of the plots on the field trip that afternoon. He stated that there is a lot of natural regeneration in the gaps, including hardwoods, Monterey pines and Douglas fir. Dr. Vogler asked if the natural regeneration will

adversely affect the project. Dr. Mark stated that the project is to determine the effect of gap management on management of a stand, so leaving the natural regeneration will just be part of the project.

Dr. Piirto stated that the trends include the fact that the parent influences the chance of survival for the seedlings, that the size of the gap has some influence on survival and that gap phasing is an important part of the mosaic in management of trees. However, the effect of disease and fire is also an important component. Dr. Piirto stated that sustainability and stewardship will include weed abatement and vegetation controls for the regeneration of Monterey pines.

Dr. Piirto thanked the students for their work on this project throughout the years.

Summary of Pitch Canker Susceptibility on *Pinus radiata* in the Año Nuevo Stand – Presented by Dr. Wally Mark

Dr. Mark explained that the objectives of this project were:

- ◆ To rate the susceptibility of Monterey pines as either susceptible, intermediate or resistant;
- ◆ To produce stock of “resistant” Monterey pines from their cuttings;
- ◆ To collect seed from the resistant trees for a management project; and
- ◆ To produce seedlings from needle fascicles and tissue culture to produce germ free stock.

Dr. Mark stated that they inoculated the seedlings in late summer and described the method of inoculation. Seventy-five trees were located on land in the Año Nuevo stand and were non symptomatic for *Fusarium circinatum*. The trees were located on land that was owned by 5 different landowners.

The trees were rated according to maximum lesion length and the number of resistant trees were analyzed according to land ownership. It was found that Big Creek and Peipmeyer Ranch had the most resistant trees and these are part of the older parts of the stand. The stand has also been expanding in this area. Dr. Mark noted that most of the Swanton Pacific trees are young and may not be as diverse. In Coastways Ranch they did not find any that were resistant. He noted that it was hard to even find any that were asymptomatic there.

Dr. Mark stated that by finding the amount of resistance by ownership, they can determine the cones that should be collected. However, because all the cones are hand processed, it might not be worth the effort. He noted that this study did not determine the percentage of resistance, because the trees were pre-selected to include only asymptomatic trees. Dr. Mark added that he would not want to use clonal stock in a natural stand, but would use only seed stock from the natural stand. However, this is not the case in other areas, for example golf courses where you don't have to worry about pollination.

Dr. Mark stated that the distribution of the inoculated trees pretty well covered north to south distribution of the Monterey pine stand. However, it doesn't go very far inland; it only goes about a mile.

Dr. Mark described where the project is now. He stated that they are creating resistant planting stock of mature Monterey pines to be used within the Año Nuevo Stand and other areas using three different methods:

1. Seedlings from open crossed resistant cone crop.
2. Resistant branch tip cuttings to produce hedges for clonal stock, which is very difficult to do. This is done with rooted plants from 6 of 12 parent trees. However, there were mixed results. It is harder with older trees, but easier with younger trees. They are trying different methods and media.
3. Tissue culture seedlings. They are just starting to get going on this project. Have ARI grant with Jeff Wong and a new grad student. They will extract meristem cells from resistant buds. They will grow seedlings in gnotobiotic conditions and will test for susceptibility. The seedlings will be in a germ free environment and can be shipped anywhere in the world.

Dr. Piirto noted that 3 graduate students and 47 undergraduate students have worked on these projects.

Dr. Piirto stated the presentations were concluded and that the meeting would be continued in the field.

Chairman Staub announced that the next meeting of the Task Force would be held in Davis on Thursday, February 24, 2005, pending actual confirmation of the date and sites by Dr. Gordon.

The Task Force adjourned at 2:30 p.m. to the field.

ACTION ITEMS

- ◆ Election – February 2005 meeting – Richard Hawley to contact Deborah Hillyard to find if she is still interested. Steve Staub to give Mr. Hawley name of alternative Fish and Game representative.
- ◆ Executive Committee to finish approved Strategic Action Plan by finishing the research section.